Listing of claims:

1(currently amended). A method of treating a volume of water to maintain a predetermined amount of a water treatment chemical in the volume of water over a time period comprising,

determining an amount of a water treatment chemical to be preserved in a volume of water to be treated,

calculating a maintenance dose of the chemical to be added to the volume of water to maintain about the amount of the chemical in the water over the time period,

providing a source of the chemical, and

supplying the maintenance dose of the water treatment chemical to the volume of water,

wherein the maintenance dose is calculated according to equation (1):

$$MD = (PV)(DC) \qquad (1)$$

where

    MD   = Maintenance dose of water treatment chemical (oz.)

    PV   = Volume of water to be treated (gallons)

    DC   = Consumption of water treatment chemical over the time period (oz. water treatment chemical/ 1000 gallons water)

and

wherein the supplying of the maintenance dose is performed by a pump having a pump tube displacement and which is caused to operate for a run time determined according to equation (2)

$$RT = ((K)(MD) / (PRPM \times PTD)) \qquad (2)$$

where:

    RT   =Run time of pump (sec)

    PRPM =Pump speed (RPM)

    PTD   =Pump tube displacement (ml)/pump revolution

    K   = 1776 ((sec-ml)/(min-oz)), and

    MD is defined as in equation (1).

2(original). The method of claim 1 wherein the source of the chemical is an aqueous solution of the chemical.

3(original). The method of claim 2 wherein the solution has about 0.5 wt.% (active) to about 80 wt.%(active) water treatment chemical.

4(original). The method of claim 1 wherein the pump is caused to operate by a computer programmed according to equation (2).

5(original). The method of claim 1 wherein the chemical is selected from the group consisting of algicides, sanitizers, oxidizers, chelating agents, pH control agents, corrosion inhibitors and stabilizers.

6(original). The method of claim 1 wherein the chemical is selected from the group consisting of chlorine dioxide, lithium hypochlorite, sodium hypochlorite, (poly(hexamethylene biguanide) hydrochloride), 1,3-bromo-chloro-dimethylhydantoin, and 1,3-dibromodimethylhydantoin, hydrogen peroxide, potassium monopersulfate, sodium perborate, sodium percarbonate, copper sulphate, copper citrate, copper EDTA (ethylene diaminetetraacetic acid), copper gluconate, colloidal silver, silver nitrate, poly(oxyethylene (dimethylimino) ethylene (dimethylimino) ethylene dichloride), sodium dimethyldithiocarbamate, 2-chloro-4,6-bis(ethylamino)-5-triazine, zinc chloride, zinc oxide, and benzyl alkonium chloride.

7(original). The method of claim 1 wherein the chemical is selected from the group consisting of alkali metal hypochlorite, alkaline earth metal hypochlorite, chlorinated isocyanurates, halogenated hydantoins, alkali metal perborates, alkali metal percarbonates, copper salts, silver salts, quaternary ammonium compounds,

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polyquaternary ammonium compounds, zinc salts, chelating agents, fungicides, pH control agents, corrosion inhibitors, and stabilizers.

8(original). The method of claim 1 wherein the water treatment chemical is hydrogen peroxide.

9(original). The method of claim 3 wherein the water treatment chemical is sanitizer added in a maintenance dose of about 0.1 ppm/day to about 6 ppm/day.

10(original). The method of claim 3 wherein the water treatment chemical is sanitizer added in a maintenance dose of about 1 ppm/day to about 3 ppm/day.

11(withdrawn). A system for treating a volume of water to maintain a predetermined amount of a water treatment chemical in the volume of water over a time period comprising,

a pump having a pump tube displacement cooperatively connected to a computer for control of the pump,

a source of chemical for supply to the pump for delivery by the pump to a volume of water,

causing the pump to operate for a time sufficient to supply an amount of water treatment chemical to the volume of water sufficient to maintain about the predetermined amount of water

treatment chemical in the volume of water over the time period, wherein

the pump is caused to operate for a run time (RT) calculated as the quotient of

$$((K) (MD) / (PRPM \times PTD))$$

where:

RT = Run time of pump (sec)

PRPM = Pump speed (RPM)

PTD = Pump tube displacement (ml)/pump revolution

K = 1776 ((sec-ml)/(min-oz)), and

MD = (PV) (DC) where

MD = Maintenance dose of water treatment chemical

PV = Volume of water to be treated

DC = Consumption amount of water treatment chemical over the time period

12(withdrawn). The method of claim 11 wherein the source of the chemical is an aqueous solution of the chemical.

13(withdrawn). The method of claim 12 wherein the solution has about 1 wt.% (active) to about 80 wt.%(active) water treatment chemical.

14(withdrawn). The method of claim 11 wherein the pump is caused to operate by a computer programmed according to equation (2).

15(withdrawn). The method of claim 11 wherein the chemical is selected from the group consisting of algicides, sanitizers, oxidizers, chelating agents, pH control agents, corrosion inhibitors and stabilizers.

15(withdrawn). The method of claim 9 wherein the chemical is selected from the group consisting of chlorine dioxide, alkali metal hypochlorite, alkaline earth metal

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hypochlorite, chlorinated isocyanurates, (poly(hexamethylene biguanide) hydrochloride)halogenated hydantoins,

hydrogen peroxide, potassium monopersulfate, chlorine dioxide, alkali metal perborates, alkali metal percarbonates, copper salts, copper sulphate, copper citrate, copper EDTA (ethylene diaminetetraacetic acid), copper gluconate, colloidal silver, silver salts, silver nitrate, quaternary ammonium compounds, polyquaternary ammonium compounds, poly(oxyethylene (dimethylimino) ethylene (dimethylimino) ethylene dichloride), sodium dimethyldithiocarbamate, 2-chloro-4,6-bis(ethylamino)-5-triazine, zinc salts, zinc chloride, zinc oxide, benzyl alkonium chloride, chelating agents, fungicides, pH control agents, corrosion inhibitors, and stabilizers.

16(withdrawn). The method of claim 11 wherein the chemical is selected from the group consisting of chlorine dioxide, lithium hypochlorite, sodium hypochlorite, (poly(hexamethylene biguanide) hydrochloride), 1,3-bromo-chloro-dimethylhydantoin, and 1,3-dibromodimethylhydantoin, hydrogen peroxide, potassium monopersulfate, sodium perborate, sodium percarbonate, copper sulphate, copper citrate, copper EDTA (ethylene diaminetetraacetic acid), copper gluconate, colloidal silver, silver nitrate, poly(oxyethylene (dimethylimino) ethylene (dimethylimino) ethylene dichloride), sodium dimethyldithiocarbamate, 2-chloro-4,6-bis(ethylamino)-5-triazine, zinc chloride, zinc oxide, and benzyl alkonium chloride.

17(withdrawn). The method of claim 11 of alkali metal hypochlorite, alkaline earth metal hypochlorite, chlorinated isocyanurates, halogenated hydantoins, alkali metal perborates, alkali metal percarbonates, copper salts, silver salts, quaternary ammonium compounds, polyquaternary ammonium compounds, zinc salts, chelating agents, fungicides, pH control agents, corrosion inhibitors, and stabilizers.

18(withdrawn). The method of claim 11 wherein the water treatment chemical is hydrogen peroxide.

19(withdrawn). The method of claim 13 wherein the water treatment chemical is sanitizer added in a maintenance dose of about 0.1 ppm/day to about 6 ppm/day.

20(withdrawn). The method of claim 13 wherein the water treatment chemical is sanitizer added in a maintenance dose of about 1 ppm/day to about 3 ppm/day.

21(withdrawn). A system for treating a volume of water to maintain a predetermined amount of a water treatment chemical in the volume of water over a time period comprising,

a device for delivering a water treatment chemical to a volume of water,

causing the device to operate for a time sufficient to deliver a maintenance dose of water treatment chemical sufficient to maintain about the predetermined amount of water treatment chemical in the volume of water over the time period,

wherein the maintenance dose (MD) = (PV) (DC) where

$$MD = \text{maintenance dose of water treatment chemical}$$
$$PV = \text{Volume of water to be treated}$$
$$DC = \text{Consumption amount of water treatment chemical over the time period.}$$

22(currently amended). A method for treating a volume of water to maintain a predetermined amount of a water treatment chemical in the volume of water over a time period comprising,

delivering a water treatment chemical to a volume of water by a device controlled by a computer,

operating the device for a time sufficient to deliver a maintenance dose of water treatment chemical sufficient to maintain about the predetermined amount of water treatment chemical in the volume of water over the time period,

wherein the maintenance dose (MD) = (PV) (DC) where

$$MD = \text{Maintenance dose of water treatment chemical [oz.]}$$